60,469-194
PA-000.05025-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Hugh James O'Donnell
Serial No.:	10/522,191
Filed:	01/25/2005
Group Art Unit:	1794
Examiner:	Gray, Jill M.
Title:	ELEVATOR BELT ASSEMBLY WITH PRESTRETCHED SYNTHETIC CORDS

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant now submits its brief in this appeal. Payment in the amount of $510.00 is made by the enclosed credit card authorization form. The Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds for any additional fees or credit the account for any overpayment.

Real Party in Interest

Otis Elevator Company is the real party in interest. Otis Elevator Company is a business unit of United Technologies Corporation

Related Appeals and Interferences

There are no related appeals or interferences.

03/28/2008 VBUI11 00000005 10522191
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Status of the Claims

Claims 1-14 are pending and on appeal.

Claims 1, 5, 7-8 and 10 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication 2003/0092524 (the *Baranda, et al.* reference).

Claims 7-10 stand rejected under 35 U.S.C. §102(b) as being anticipated by PCT Patent Publication WO 01/14630 (the *Prewo* reference).

Claims 2-4, 6, 9 and 11-12 stand rejected under 35 U.S.C. §103 as being unpatentable over the *Prewo* reference.

Status of Amendments

There are no unentered amendments.

Summary of Claimed Subject Matter

Appellants claims include independent claims 1, 7 and 13. Claim 1 recites a method of making an elevator belt assembly 40 having a plurality of cords 42 within a jacket 44. (Page 3, lines 9-10; page 4, line 7) The plurality of cords are aligned in a selected arrangement (page 6, line 7). The cords are tensioned a selected amount to stretch the cords (page 6, lines 8-9). A selected jacket material is applied to the cords 42 to encase the cords 42 in the jacket 44 so that the cords 42 remain stretched within the jacket 44 (page 7, line 9 and 12-14).

Dependent claim 2 is argued separately. Claim 2 includes having the cords 42 tensioned using a load that exceeds an anticipated greatest load that the belt assembly will experience once installed in an elevator system (page 6, lines 10-12).

Dependent claim 3 is argued separately. That claim recites that the cords 42 are tensioned using a load corresponding to a desired percentage of a breaking strength of the cords 42 (page 6, lines 8-10).

Claim 4 is argued separately and it recites that the load corresponds to at least approximately ten percent of the cord breaking strength (page 6, lines 12-13). Pre-stretching the cords 42 at the ten percent of the breaking strength level is selected in one example because elevator safety codes require safety factors typically in the range from 10:1 up to 12:1. Pre-stretching the cords at the ten percent level results in belts with little or no elastic stretch and no construction stretch. In other words, the belt design typically allows for up to a ten percent stretch so that the belt design meets safety codes. By pre-stretching at the ten percent level, when the belt is placed in service after being installed in an elevator system, there is essentially no stretch during system operation.

Independent claim 7 recites an elevator belt assembly 40 comprising a plurality of cords 42 that are stretched (page 3, lines 9-14). A jacket 44 covers over the stretched cords and keeps the cords 42 stretched the desired amount without any external load applied to the belt assembly 40 (page 7, lines 12-14; page 8, lines 1-4).

Claim 8 is argued separately and it recites that the belt assembly 40 has limited elastic stretch (page 8, line 4).

Claim 11 is argued separately and it recites that the cords 42 are stretched an amount corresponding to a load that exceeds an anticipated greatest load that the assembly 40 will experience once installed in an elevator system (page 6, lines 10-12).

Claim 12 is argued separately and it recites that the cords are stretched an amount corresponding to a load that is at least approximately ten percent of the cord breaking strength (page 6, lines 12-13).

Independent claim 13 recites an elevator belt assembly made by the process comprising the steps of aligning a plurality of cords in a selected arrangement (page 3, lines 10-11); stretching the

cords by applying a selected amount of tension (page 6, lines 8-10); and applying a selected jacket material to the stretched cords to encase the cords in the jacket so that the cords remain stretched within the jacket (page 7, lines 12-14).

It is important to note that Appellant has used the term stretch differently than the term tensioning and that stretching cords according to Appellant's claimed invention involves elongating or lengthening the cords during a belt assembly process. Pre-stretching the cords during the belt assembly process provides the features mentioned in the description such as providing a belt assembly that has little or no elastic stretch or construction stretch when the belt is subjected to operating loads once installed in an elevator system (page 3, lines 11-14). All previous arrangements shown in the references cited by the Examiner do not make any mention of pre-stretching cords during an assembly process.

Grounds of Rejection to be Reviewed on Appeal

Claims 1, 5, 7-8 and 10 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication 2003/0092524 (the *Baranda, et al.* reference).

Claims 7-10 stand rejected under 35 U.S.C. §102(b) as being anticipated by PCT Patent Publication WO 01/14630 (the *Prewo* reference).

Claims 2-4, 6, 9 and 11-12 stand rejected under 35 U.S.C. §103 as being unpatentable over the *Prewo* reference.

ARGUMENT

None of the references disclose or in any way suggest Appellant's concept of pre-stretching cords in an elevator belt assembly during an assembly process and encasing the pre-stretched cords in a jacket such that the cords remain in a stretched condition even absent any external load applied

to the belt assembly. As there is nothing in the cited references that in any way suggests stretching cords in that manner to provide a belt assembly that has pre-stretched cords within it before the belt assembly is installed in an elevator system, all of Appellant's claims must be allowed.

The rejection of claims 1, 5, 7-8 and 10 under 35 U.S.C. §102(e) as being anticipated by the *Baranda, et al.* reference must be reversed.

Basically, this appeal comes down to a reasonable interpretation of the term stretch within Appellant's claims. The Examiner has taken the position that any tension whatsoever placed on a cord will "stretch" the cord. Appellant respectfully submits that such an interpretation of Appellant's claim language is not reasonable and should be reversed.

The Examiner equates any tension with stretching. Appellant's claims recite tensioning distinct from stretching. Claim 1, for example, includes "tensioning the cords a selected amount to stretch the cords." Appellant specifically recites using an amount of tension that will stretch the cords. It is clear from Appellant's specification that the stretching of the cords is significant and distinguished from merely applying tension to the cords. The term stretch as used in Appellant's claims must be interpreted to mean something different than merely applying tension to the cords. If "stretch" and tension mean the exact same thing within the context of Appellant's claims, then the recitation of tension and stretch as separate items would be redundant and meaningless. The use of tensioning separate from stretch and reciting that the tensioning is in an amount to stretch the cords indicates that stretching and tensioning are two different things within the context of Appellant's claims.

It is not reasonable to interpret a reference that does not in any way suggest a tension or load sufficient to stretch a cord to anticipate Appellant's claims. There is nothing in the *Baranda, et al.* reference that in any way indicates that any cords are stretched during a process of making an

elevator belt assembly. The *Baranda, et al.* reference teaches applying tension to the cords in a manner that controls the spacing of the cords from the exterior surface of the jacket that encases the cords in that reference. It is noteworthy that the *Baranda, et al.* reference is directed to a technique of making an elevator belt assembly that does not rely upon cord supports during the manufacturing process to avoid forming grooves in the exterior of the jacket. Instead of supporting the cords with a physical structure underneath the cords during a jacket application process, the *Baranda, et al.* reference teaches controlling tension on the cords to keep them straight enough to achieve a desired alignment within the jacket.

Keeping a cord straight is not the same thing as stretching a cord as Appellant is claiming stretching cords. For example, holding two ends of a cord without tension might allow the cord to sag in the middle between the two ends. Applying some tension would eventually raise the lowest point of that sag until the cords were held straight between the two ends. A sufficient amount of tension to hold the cords straight in that manner would not necessarily stretch the cords. A sufficiently high load would have to be added to such tension in order to achieve any stretching of the cords.

There is nothing in the *Baranda, et al.* reference that in any way indicates that any tension applied in that reference would cause the cords to be stretched. The only mentioned tension in the *Baranda, et al.* reference is 50 Newtons (i.e., 50 Kgm/s^2). If the cords of an elevator belt would stretch when subjected to a 50 Kg load (e.g.., about 100 pounds), then that belt could not reasonably be expected to support the substantially greater weight of an elevator car, counterweight and multiple passengers in an acceptable manner. It follows that the tension applied in the *Baranda, et al.* reference, for example, does not rise anywhere near the level of a tension to pre-stretch a cord as claimed by Appellant. In other words, it is not a reasonable interpretation of the tension in the

Baranda, et al. reference as being sufficient for stretching the cords. Tensioning the cords for maintaining them in a straight or desired alignment during a belt manufacturing process is not the same as and does not in any way suggest stretching the cords during a belt making process. Therefore, there is no *prima facie* case of anticipation and the rejection based upon the *Baranda, et al.* reference must be reversed.

Additionally, claim 1 specifically recites that the jacket material encases the cords and maintains them stretched within the jacket. There is nothing within the *Baranda, et al.* reference that suggests pre-stretching cords and then applying a jacket material such that the cords remain in that stretched (e.g., elongated or lengthened) condition within the jacket.

In the case of claim 7, the jacket over the stretched cords keeps the cords stretched the desired amount without any external load applied to the belt assembly. There is nothing at all within the *Baranda, et al.* reference that in any way suggests that cords are maintained in a stretched condition absent an external load applied to the cords. In other words, the belt assembly of Appellant's claim 7 has cords that are already stretched a desired amount before the belt assembly is subjected to any load while supporting an elevator car in an elevator system. There is nothing at all within the *Baranda, et al.* reference that can be reasonably interpreted to suggest such an arrangement. The cited references are entirely silent on this feature of Appellant's claims.

Claim 8 is separately patentable.

Claim 8 specifically recites that the belt assembly "has limited elastic stretch." Pre-stretching the cords limits any amount of elastic stretch that would be possible if the cords had not been pre-stretched during the assembly process. The belt assembly of the *Baranda, et al.* reference would have elastic stretch that would occur once such a belt assembly were installed in an elevator

system. The loads on the belt cause stretching during service in an elevator system with most belt arrangements. The arrangement recited in Appellant's claim 8, on the other hand, has limited elastic stretch because the cords have already been stretched a desired amount during the assembly process and the jacket over the stretched cords keeps the cords stretched the desired amount even without any external load applied to the belt assembly. There is nothing in any of the cited references that discloses a belt assembly that has limited elastic stretch. The rejection of claim 8 has to be reversed.

The rejections of claims 7-10 under 35 U.S.C. §102(b) as being anticipated by the *Prewo* reference must be reversed.

The *Prewo* reference is silent regarding any stretching of the cords within the jacket of that reference. The only arguable reference to how the cords of the *Prewo* reference are stretched is when that reference discusses how a steel cord may break before a synthetic cord. That condition would only occur in the context of use of the elevator system. In other words, the only possible mentioning of anything in the *Prewo* reference that relates in any way to stretching of the cords is related to breaking the cords during use in an elevator system. There is no teaching or suggestion that the jacket of the *Prewo* reference keeps the cords stretched without any external load applied to the belt assembly. The only stretching (if any) mentioned in the *Prewo* reference occurs as a result of an external load (e.g., the elevator) being applied to the belt of the *Prewo* reference.

Because there is nothing within the *Prewo* reference that in any way suggests having cords that are stretched and maintained stretched a desired amount without any external load applied to the belt assembly, there is no *prima facie* case of anticipation against any of Appellant's claims 7-10.

Claim 8 is separately patentable.

As discussed above, claim 8 specifically recites that the belt assembly has limited elastic stretch. The type of breaking mentioned in the *Prewo* reference and discussed above would only occur subsequent to elastic stretch while the belt is in use in the *Prewo* reference. In other words, the only possible reasonable interpretation of the *Prewo* reference is that it would experience significant elastic stretch. Therefore, it cannot be interpreted as teaching a belt assembly that has limited elastic stretch because it does not teach a belt assembly having cords pre-stretched and maintained in a stretched condition without any external load applied to the belt assembly as required by Appellant's claim 8. The rejection of claim 8 based upon the *Prewo* reference must be reversed.

The rejection of claims 2-4, 6, 9 and 11-12 under 35 U.S.C. §103 based upon the *Prewo* reference must be reversed.

As described above, the *Prewo* reference does not provide any indication of any tension on the cords to stretch the cords combined with applying a jacket material to the cords so that they remain stretched within the jacket. There is nothing within the *Prewo* reference regarding tensioning the cords during a manufacturing process at all. At best, there may be an inferred stretching that occurs prior to breaking a cord that would only occur when the belt of the *Prewo* reference is installed in an elevator system and subjected to an external load. Therefore, it is impossible to make the leap to the specific techniques recited in claims 2-4 and 11-12. It is not possible to establish a *prima facie* case of obviousness based on the *Prewo* reference without using improper hindsight to somehow justify finding a reason to utilize particular tension loads to achieve

something that the *Prewo* reference never discusses (e.g., pre-stretching cords and applying a jacket to them during a manufacturing process).

Claims 2 and 11 are separately patentable.

Claims 2 and 11 specifically recite that the cords are tensioned using a load that exceeds an anticipated greatest load that the belt assembly will experience once installed in an elevator system. There is nothing whatsoever within the *Prewo* reference or any of the other cited references that in any way corresponds to making an elevator belt assembly and tensioning cords to stretch them using a load of the type recited in claims 2 and 11. As explained, for example, on page 6, lines 7-20 of Appellant's specification, using a load of the type recited in claims 2 and 11 results in essentially no belt stretch during elevator system operation (e.g., once the belt assembly is installed and placed in use). None of the references in any way disclose such a load. The *Prewo* reference is entirely silent regarding any such load during a belt manufacturing process.

While the Examiner does not apply the *Baranda, et al.* reference when rejecting claims 2 and 11, it is worth noting again that the only mentioned tension in either reference is found in the *Baranda, et al.* reference. The only specifically mentioned tension in the references is 50 Newtons (i.e., 50 Kgm/s^2). If an elevator belt would stretch when subjected to a 50 Kg load (e.g.., about 100 pounds), then that belt could not reasonably be expected to support the substantially greater weight of an elevator car, counterweight and multiple passengers in an acceptable manner. It follows that the tension applied in the *Baranda, et al.* reference, for example, does not rise anywhere near the level of a tension to pre-stretch a cord as claimed by Appellant. In other words, it is not a reasonable interpretation of the tension in the *Baranda, et al.* reference as being sufficient for stretching the cords.

In the case of claims 2 and 11, it is entirely unreasonable to find any support in any of the references for using a load that exceeds an anticipated greatest load that the belt assembly will experience once installed in an elevator system. 50 Kg certainly does not come anywhere near exceeding a greatest load that an elevator belt assembly will experience upon installation. The weight of the elevator car and counterweight by themselves even without any passengers present far exceeds 50 Kg. There is no basis within the references whatsoever for rejecting claim 2. There is no suggestion or reason for adding a load of the type recited in claims 2 or 11 to the teachings of the *Prewo* reference. The only possible justification for such a modification of the *Prewo* reference would be hindsight reasoning based upon the teachings of Appellant's disclosure and claims. Of course, such reasoning is not permissible when attempting to establish a *prima facie* case of obviousness.

The rejection of claims 2 and 11 must be reversed.

Claim 3 is separately patentable.

There is nothing whatsoever in the *Prewo* reference that comes anywhere near suggesting using a load that is a desired percentage of a breaking strength of the cords when tensioning them sufficiently to stretch the cords. Appellant is the only one to disclose such a technique. There is no basis for the rejection of claim 3 and no *prima facie* case of obviousness.

Claims 4 and 12 are separately patentable.

There is absolutely nothing in the *Prewo* reference (or the *Baranda, et al.* reference, for that matter) that in any way suggests anything along the lines of tensioning cords using a load corresponding to 10% of a breaking strength of the cords. Without any suggestion whatsoever

within the reference for using such a load for tensioning cords during a belt manufacturing process, there is no way to establish a *prima facie* case of obviousness. The only possible suggestion for such a load is found in Appellant's disclosure and claims. The rejection of claims 4 and 12 must be reversed.

Claims 13 and 14 are allowable.

The Examiner has not explained the specific grounds for rejecting claims 13 and 14. Both of these claims are allowable. An elevator belt assembly made by the process comprising the steps recited in claim 13, which includes stretching cords by applying a selected amount of tension and applying a selected jacket material to the stretched cords to encase the cords in the jacket so that the cords remain stretched within the jacket is nowhere found within the references relied upon by the Examiner as explained above. As a product-by-process claim, claim 13 is patentable because the resulting structure of the claimed belt is different than the structure of the belts made according to the teachings of the *Baranda et al.* and *Prewo* references.

Claims 13 and 14 are allowable.

CONCLUSION

Appellant's claims recite a particular way of making an elevator belt assembly that includes using a tension sufficient to pre-stretch the cords of the assembly before the assembly is ever placed in use in an elevator system. The only tension used during a manufacturing process in the cited references does not come close to being sufficient to stretch a cord within an elevator belt. A 50 Kg load is the only tensioning load mentioned in the references relied upon by the Examiner. If a load of that magnitude were sufficient to stretch cords used in an elevator belt assembly as recited in Appellant's claims, then the cords would be insufficiently resistant to stretching to make them useful within an elevator system. As pointed out above, the pre-stretching aspects of Appellant's claims are nowhere found or suggested within the cited references. All rejections must be reversed.

Respectfully submitted,

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March 27, 2008
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CERTIFICATE OF MAILING

I hereby certify that the enclosed **Appeal Brief** is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Mail Stop Appeal Brief – Patents Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on March 27, 2008.

Theresa M. Palmateer

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APPENDIX OF CLAIMS

1. A method of making an elevator belt assembly having a plurality of cords within a jacket, comprising the steps of:

(a) aligning the plurality of cords in a selected arrangement;

(b) tensioning the cords a selected amount to stretch the cords; and

(c) applying a selected jacket material to the cords to encase the cords in the jacket so that the cords remain stretched within the jacket.

2. The method of claim 1, wherein the cords are tensioned using a load that exceeds an anticipated greatest load that the belt assembly will experience once installed in an elevator system.

3. The method of claim 1, wherein the cords are tensioned using a load corresponding to a desired percentage of a breaking strength of the cords.

4. The method of claim 3, wherein the load corresponds to at least approximately 10% of the cord breaking strength.

5. The method of claim 1, wherein the jacket material comprises a substantially noncompressible urethane.

6. The method of claim 1, including making the cords using a synthetic material.

7. An elevator belt assembly, comprising:

a plurality of cords that are stretched; and

a jacket over the stretched cords that keeps the cords stretched the desired amount without any external load applied to the belt assembly.

8. The assembly of claim 7, wherein the belt assembly has limited elastic stretch.

9. The assembly of claim 7, wherein the cords comprise a synthetic material.

10. The assembly of claim 7, wherein the jacket comprises an ether based polyurethane.

11. The assembly of claim 7, wherein the cords are stretched an amount corresponding to a load that exceeds an anticipated greatest load that the assembly will experience once installed in an elevator system.

12. The assembly of claim 7, wherein the cords are stretched an amount corresponding to a load that is at least approximately 10% of the cord breaking strength.

13. An elevator belt assembly made by the process, comprising the steps of:

(a) aligning a plurality of cords in a selected arrangement;

(b) stretching the cords by applying a selected amount of tension; and

(c) applying a selected jacket material to the stretched cords to encase the cords in the jacket so that the cords remain stretched within the jacket.

14. The assembly of claim 13, wherein the cords comprise a synthetic material and the jacket comprises a substantially noncompressible urethane material.

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EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.